1897MNRAS..57..541S

Corrections to lists of Double Stars.

Monthly Notices, vol. lv. p. 312.

No. 1. λ *Toucanæ*. Identification erroneous. This pair is U.A. 64 *Toucanæ*, which was noted as a double star at Cordoba in 1873.

No. 18. Identification erroneous. The star is Lac. 8602. Position for 1900 R.A. $20^h 47^m 53^s$. Decl. $-52°29'.7$.

Journal Brit. Astron. Association.

No. 42. This star is single in the 7-in. equatorial of this Observatory. Star probably wrongly identified at time of first observation.

Royal Observatory :
Cape of Good Hope.

Micrometrical Measures of the Double Stars in the Great Nebula and Cluster Surrounding η Carinæ, made with the 24-inch Refractor of the Lowell Observatory. By T. J. J. See, A.M., Ph.D. (Berlin).

Micrometrical measures of the double stars in the great nebula and cluster surrounding η *Carinæ* would seem to be a desirable supplement to the determination of the positions of the 217 single stars of that interesting region made by Gould, and embodied in the *Argentine General Catalogue*, pp. 625–630. The earlier work of Sir John Herschel in the same region led him to detect and to measure the approximate angles and distances of some of the double stars given below ; we have compared his results with those here obtained, and there are thus disclosed in several cases measurable differences, which are most probably due to changes in the past sixty years. Our observations have been made when the cluster was within an hour of the meridian, and, therefore, at an altitude of about 11°.

It will readily be understood that the atmospheric spectra of stars seen at our station, 7,600 feet above sea level, are much less troublesome than at places where the atmosphere is denser, yet it is apparent that exact micrometrical measurement is a matter of some difficulty, and hence in this work we have been careful to select nights when the seeing was good. Accordingly, although the objects were measured within 11° of the horizon, and more or less involved in the nebulosity which extends throughout the

1897MNRAS..57..541S

cluster, the definition on the whole was very satisfactory, and the resulting measures will not, I think, be affected by any considerable errors.

The whole region has been very carefully examined, and all objects measured which seemed to possess any real interest. The objects are arranged and numbered in order of right ascension, and wherever possible, I have given the corresponding numbers in Gould's very accurate catalogue of this cluster (G). The positions of the stars are referred to the equator and mean equinox of 1900·0.

No. 1 = G 10.

$\alpha = 10^{h}\ 36^{m}\ 46^{s}{\cdot}0$; $\delta = -59^{\circ}\ 1'\ 19''{\cdot}0$.

8·2, yellow ; 11·6, bluish yellow.

t	θ_0	ρ_0	
1897·181	274°·1	17″·42	seeing 5

No. 2 = H_2 4347.

$\alpha = 10^{h}\ 38^{m}\ 19^{s}{\cdot}0$; $\delta = -59^{\circ}\ 22'\ 59''{\cdot}0$.

10, yellow ; 11·7, bluish yellow.

1897·178	303°·2	3″·35	seeing 5	close system.
1897·179	304·6	3·54	5	
1897·181	307·1	2·42	5	
1897·184	...	3·25	5	
1897·180	305·0	3·14		

No. 3. Triple.

$\alpha = 10^{h}\ 38^{m}\ 21^{s}{\cdot}5$; $\delta = -59^{\circ}\ 26'\ 35''{\cdot}7$.

10·4, yellow ; 11·7, yellow ; 12·9, bluish yellow.

AB. New.

1897·181	349°·2	2″·88	seeing 5
1897·182	348·3	3·12	5
1897·184	347·1	2·74	5
1897·185	345·2	3·44	5
1897·183	347·5	3·05	

AC = H_2 4348.

1897·181	259°·3	13″·84	seeing 5
1897·182	259·9	13·89	5
1897·184	259·6	14·24	5
1897·185	259·5	14·03	5
1897·183	259·6	14·00	

1897MNRAS..57..541S

No. 4 = H_2 4354.

$\alpha = 10^h\ 39^m\ 57^s{\cdot}2$; $\delta = -59^\circ\ 34'\ 20''{\cdot}9$.

10·6, yellow; 12·6, bluish.

	1897·175	218°·4	10″·25	seeing 5
	1897·176	216·9	10·42	5
	1897·178	216·9	10·49	5
	1897·176	217·4	10·39	
Herschel	1836·471	228·4	12	1*n*

No. 5 = G 78.

$\alpha = 10^h\ 40^m\ 3^s{\cdot}0$; $\delta = -59^\circ\ 1'\ 32''{\cdot}1$.

8·5, yellow; 12·4, bluish yellow.

1897·181	236°·7	7″·27	seeing 5
1897·182	237·0	6·76	5
1897·184	240·7	7·85	5
1897·185	241·7	7·40	5
1897·183	239·0	7·32	

No. 6 = G 80 = H_2 4356.

$\alpha = 10^h\ 40^m\ 5^s{\cdot}8$; $\delta = -59^\circ\ 1'\ 21''{\cdot}2$.

7·5, orange yellow; 11·9, bluish purple.

	1897·175	151°·6	2″·75	seeing 6	Physical system
	1897·176	149·6	2·74	6	
	1897·178	147·4	3·07	5	
	1897·181	147·9	2·76	5	
	1897·178	149·1	2·83		
				Mags.	
Herschel	1836·463	150°·5	2″	7·5 ; 9	
	1837·312	147·3	2	8 ; 11	

No. 7 = G 82 = H_2 4359.

$\alpha = 10^h\ 40^m\ 7^s{\cdot}6$; $\delta = -59^\circ\ 34'\ 0''{\cdot}8$.

10·4, yellow; 12 6, bluish.

	1897·175	234°·6	6″·74	seeing 5
	1897·176	234·8	6·66	5
	1897·178	232·8	6·52	5
	1897·176	234·1	6·64	
Herschel	1837·309	238·6	6	1*n*

1897MNRAS..57..541S

No. 8 = G 83. New.

$\alpha = 10^{h}\ 40^{m}\ 8^{s}{\cdot}3$; $\delta = -59^{\circ}\ 0'\ 57''{\cdot}4$.

9·4, yellow : 13, bluish yellow.

		°	″	
	1897·175	306·8	4·17	seeing 5
	1897·176	307·2	4·11	5
	1897·178	305·4	3·55	5
	1897·181	303·1	3·37	5
	1897·177	305·6	3·80	

No. 9 = H_2 4358.

$\alpha = 10^{h}\ 40^{m}\ 10^{s}{\cdot}6$; $\delta = -59^{\circ}\ 34'\ 31''{\cdot}6$.

10·4, yellow ; 12·7, bluish.

		°	″	
	1897·175	192·3	8·36	seeing 5
	1897·176	192·7	7·95	5
	1897·178	194·2	8·04	4
	1897·176	193·1	8·12	
Herschel	1837·309	199·4	8	1*n*

No. 10 = ZC 2864 = H_2 4360. Triple.

$\alpha = 10^{h}\ 40^{m}\ 15^{s}{\cdot}5$; $\delta = -59^{\circ}\ 3'\ 1''{\cdot}8$.

A = 8·3, yellow ; 9·0, yellow ; 9·3, yellow.

BC.

		°	″	
	1897·175	118·2	1·67	seeing 5
	1897·176	120·8	1·84	6
	1897·178	118·0	1·84	4
	1897·176	119·0	1·78	
Herschel	1837·309	111·3	1	1*n*

$\frac{BC}{2}$ and A = B 3190.

		°	″	
	1897·175	108·6	14·27	seeing 5
	1897·176	108·2	14·29	6
	1897·178	108·3	13·91	4
	1897·176	108·4	14·16	
Herschel	1834·197	102·7	15	
	1837·309	106·8	12	

1897MNRAS..57..541S

No. 11 = G 107 = B 3194.

$\alpha = 10^{h}\ 40^{m}\ 42^{s}{\cdot}1$; $\delta = -59^{\circ}\ 12'\ 45''{\cdot}8$.

9, yellow ; 9·2, yellow.

	°	″	
1897·181	213·7	18·81	seeing 5
1897·182	214·0	18·64	5
1897·182	213·8	18·72	

There is a small double n.p. this system, 90° ±, 3″·8 ± mags. 12·5 ; 13, both yellow.

		°	″	
Herschel	1834·197	206·1	12	1*n*

No. 12 = A.G.C. 14715 = H_2 4364. Triple.

$\alpha = 10^{h}\ 40^{m}\ 51^{s}{\cdot}4$; $\delta = -58^{\circ}\ 50'\ 3''{\cdot}0$.

8·9, yellow ; 10·1, yellow ; 11·1, yellow.

AB.

	°	″	
1897·175	354·6	8·27	seeing 5
1897·178	355·5	7·92	5
1897·176	355·1	8·09	

AC.

	°	″	
1897·175	147·4	[8·27 ±]	seeing 5
1897·178	148·1	9·46	5
1897·181	146·8	9·47	5
1897·178	147·4	9·46	

No. 13, system n.f. η *Carinæ* = H_2 4366.

$\alpha = 10^{h}\ 41^{m}\ 11^{s}{\cdot}4$; $\delta = -59^{\circ}\ 9'\ 32''{\cdot}7$.

11·4, bluish yellow ; 12·8, bluish yellow.

	°	″	
1897·175	141·0	5·28	seeing 5
1897·176	141·2	5·40	5
1897·178	144·5	[4·47]	5
1897·181	143·9	5·19	5
1897·182	143·2	5·51	5
1897·178	142·8	5·35	

1897MNRAS..57..541S

A and η *Carinæ* (H_2 4366, No. 2).

		°	″		
	1897·175	37·7	13·82	seeing 5	
	1897·178	41·6	14·33	5	
	1897·181	38·9	14·30	5	
	1897·178	39·4	14·15		
Herschel	1834·197	30·3	15		A and η *Carinæ.*
	1834·197	46·8	12		B and η *Carinæ.*

No. 14 = ZC 2946.

$\alpha = 10^h\ 41^m\ 20^s{\cdot}1$; $\delta = -59^\circ\ 13'\ 30''{\cdot}0$.

9, yellow ; 9·5, yellow.

	°	′		
1897·192	190·3	16·12	seeing 3	Hazy.
1897·193	190·9	15·75	3	
1897·192	190·6	15·94		

No. 15 = A.G.C. 14744 = H_2 4369.

$\alpha = 10^h\ 41^m\ 57^s{\cdot}1$; $\delta = -58^\circ\ 57'\ 45''{\cdot}2$.

7·3, reddish ; 12·1, bluish purple.

	°	″	
1897·175	40·7	14·60	seeing 5
1897·178	41·4	14·96	4
1897·179	41·3	14·92	4
1897·177	41·1	14·83	

No. 16 = G 166.

$\alpha = 10^h\ 43^m\ 23^s{\cdot}2$; $\delta = -59^\circ\ 34'\ 1''{\cdot}4$.

8·5, yellow ; 11·5, bluish.

	°	″	
1897·181	115·5	16·78	seeing 5

Faint system n.f. at dist. of 25″ ± .

	°	′	
1897·181	274·6	8·28	seeing 5

Magnitudes 10·5, 11·5, both yellow.

No. 17 = G 190 = H_2 4374.

$\alpha = 10^h\ 44^m\ 58^s{\cdot}8$; $\delta = -58^\circ\ 55'\ 6''{\cdot}4$.

9·4, yellow ; 12·8, bluish yellow.

	°	″		
1897 192	117·5	14·89	seeing 4	Hazy.
1897·193	117·3	14·52	3	
1897·192	117·4	14·71		

1897MNRAS..57..541S

No. 18 = ZC 3447 = A.G.C. 14880.

$\alpha = 10^h\ 48^m\ 21^s{\cdot}8$; $\delta = -58^\circ\ 12'\ 56''{\cdot}9$.

9, yellow; 12·5. bluish.

1897·192	217°·9	3′·89		blurred, hazy.
1897·193	218·3	3·29	seeing 3	
1897·192	218·1	3·59		

Although the above comparison does not indicate any very large or certain motion in the double stars of this group, I think it probable that some of the apparent changes are real. If some of the systems should be found to be in motion the result would ultimately possess a high value, as throwing light upon the connection of the stars of this cluster with the nebula in which they are projected. The region is remarkably rich in fairly close double stars, and one would naturally think that some of them at least are physical systems; but it may require ages for their motions to develope.

It had been my intention to make a very careful drawing of this great nebula, but it now seems best to defer the execution of the plan till a more convenient location of the observatory further south shall furnish more favourable conditions for a faithful delineation of its many delicate and wonderful details. It seems proper to add that when viewed with the 24-inch refractor the striking phenomena disclosed have no close resemblance to the drawings executed by Sir John Herschel, nor to the photographs recently secured by Dr. Gill. The greatly increased detail shown renders the appearance one of great complexity, and hence a really authoritative sketch will require the most favourable conditions, besides the exercise of much skill and care.

Lowell Observatory, City of Mexico:
1897 *March* 15.

The Orbit of μ Draconis. By S. W. Burnham.

As a double star this is known as Σ 2130 (= ♅ II. 13 = Sh 242). It was discovered by Herschel I. 1779 October 17, and, as the distance was between 4″ and 8″, it was placed in his Class II. Both angle and distance were measured, and the latter recorded as 4″·354 "mean measure" (*Phil. Trans.* 1782). In his "Synopsis" of his father's double-star observations (*Mem. R.A.S.* vol. xxxv.) Herschel II. gives this distance as 4″·69, and the date a few days later than that in the original publication, and the date of the measure of the position angle as 1781·73. The latter